

Applicant: Nigel David Timms et al.
Application No.: 10/580,455

REMARKS

The Applicant thanks the Examiner for the careful consideration of this application.

Claims 2, 6, 9-14, 17, and 24-27 are currently pending. Claims 10, 17, and 27 have been amended. Claims 1, 3-5, 7, 8, 15, 16, and 18-23 have been cancelled, without prejudice. Based on the foregoing amendments and the following remarks, the Applicant respectfully requests that the Examiner reconsider all outstanding rejections and that they be withdrawn.

Rejections under 35 U.S.C. § 112

The Office Action rejected claim 9 under 35 U.S.C. § 112, second paragraph, as being indefinite. Specifically, the Office Action asserts that there is no antecedent basis for “the fluid” in claim 9. The Applicant traverses this rejection in view of claim 2, line 3, where it recites “fluid flowing through the fluid channel.” Claim 9 depends from claim 2. Accordingly, the Applicant submits that there is antecedent basis for “the fluid” in claim 9, and requests that this rejection be withdrawn.

Rejections under 35 U.S.C. § 102

The Office Action rejected claims 10, 12-14, and 27 under 35 U.S.C. § 102(b) as being anticipated by EP 0976682 A2 to McClenaghan et al. (“McClennaghan”). The Applicant traverses this rejection. Nevertheless, independent claims 10 and 27 have been amended solely to further prosecution. Claims 10 and 27 are patentable over McClenaghan for at least the following reasons.

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Claims 10 and 12-14

McClenaghan does not disclose that “a ratio of a fluid flow area of the device and/or channels thereof to a fluid flow area of a fluid supply conduit to which the device is attached is in the range of substantially 1:1.1 to substantially 1:2.8,” as recited by claim 10. The Office Action apparently aligns the lower channels 36, 38 shown in McClenaghan’s Figures 1 and 2 with the claimed “channels.” Further, the Office Action apparently aligns the fuel supply pipe 12 disclosed in McClenaghan’s Abstract with the claimed “fluid supply conduit.” However, nowhere does McClenaghan disclose that the ratio of a fluid flow area of the lower channels 36, 38 to a fluid flow area of the fuel supply pipe 12 is in the range of substantially 1:1.1 to substantially 1:2.8, as claimed. Rather, McClenaghan is completely silent about such a ratio.

Furthermore, the claimed device having “a ratio of a fluid flow area of the device and/or channels thereof to a fluid flow area of a fluid supply conduit to which the device is attached [] in the range of substantially 1:1.1 to substantially 1:2.8,” provides non-obvious advantages over the prior art. For example, as shown in the attached test reports, prepared by an independent research lab, the claimed device is approximately 9.4% to 9.5% more fuel efficient than prior art devices. See, e.g., ARJO WIGGINS Stoneywood Fuel +™ System Performance Measurement (attached) at page 4, and Arjo Wiggins Fuel +™ System, Final Report (attached) at page 11. Accordingly, the Applicant submits that McClenaghan neither anticipates nor renders obvious claim 10.

Claims 12-14 depend from claim 10, and are patentable over McClenaghan for at least the same reasons.

Claim 27

McClenaghan does not disclose that “the fluid supply conduit defines a first cross-sectional area, the fluid channel defines a second cross-sectional area, and a ratio of the first cross-sectional area to the second cross-sectional area is between about 1:1.1 and about 1:2.8,” as recited by claim 27. The Office Action apparently aligns the lower channels 36, 38 shown in McClenaghan’s Figures 1 and 2 with the claimed “fluid channel.” Further, the Office Action apparently aligns the fuel supply pipe 12 disclosed in McClenaghan’s Abstract with the claimed “fluid supply conduit.” However, nowhere does McClenaghan disclose that the fuel supply pipe 12 defines a first cross-sectional area, the lower channels 36, 38 define a second cross-sectional area, and a ratio of the first cross-sectional area to the second cross-sectional area is between about 1:1.1 and about 1:2.8, as claimed. Rather, McClenaghan is completely silent about such a ratio. Furthermore, as set forth above with respect to claim 10, the device of claim 27 provides non-obvious advantages over the prior art, particularly in increased fuel efficiency. Accordingly, the Applicant submits that claim 27 is neither anticipated by, nor rendered obvious by, McClenaghan.

Rejections under 35 U.S.C. § 103

(1) The Office Action rejected claims 2, 6, 9, 17, and 24-26 under 35 U.S.C. § 103(a) as being unpatentable over McClenaghan. The Applicant traverses this rejection. Claim 17 depends from claim 10, which as demonstrated above, is neither anticipated, nor rendered

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obvious, by McClenaghan. Claims 2, 25, and 26 are the independent claims subject to this rejection, and are patentable for at least the reasons set forth below.

Claims 2, 6, 9, and 24

The Office Action acknowledges that McClenaghan does not disclose “the ratio of the cross-sectional area of the fluid supply conduit to the total cross-sectional area of the fluid channel or all of the fluid channels being in the range substantially 1:1.1 to substantially 1:2.8,” as recited by claim 2. Instead, the Office Action asserts that, absent a showing that the claimed ratio would perform differently than the prior art, the claimed range would have been obvious to one of ordinary skill in the art.

The Applicant disagrees that the claimed range would have been obvious, because the claimed device provides non-obvious advantages over the prior art. For example, as demonstrated in the attached independent test reports, the device of claim 2 is approximately 9.4% to 9.5% more fuel efficient than prior art devices. See, e.g., ARJO WIGGINS Stoneywood Fuel +™ System Performance Measurement (attached) at page 4, and Arjo Wiggins Fuel +™ System, Final Report (attached) at page 11. Accordingly, the Applicant submits that claim 2 is patentable over McClenaghan.

Claims 6, 9, and 24 depend from claim 2, and are patentable for at least the same reasons.

Claim 25

The Office Action acknowledges that McClenaghan does not disclose “wherein the fluid

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supply conduit defines a first cross-sectional area, the fluid channel defines a second cross-sectional area, and a ratio of the first cross-sectional area to the second cross-sectional area is between about 1:1.1 and about 1:2.8,” as recited by claim 25. Instead, the Office Action asserts that the claimed range would have been obvious to one of ordinary skill in the art. The Applicant disagrees, because, as discussed above in connection with claim 2, the device of claim 25 provides non-obvious advantages over the prior art. For example, as demonstrated in the attached independent test reports, the device of claim 25 is approximately 9.4% to 9.5% more fuel efficient than prior art devices. Accordingly, the Applicant submits that claim 25 is patentable over McClenaghan.

Claim 26

The Office Action acknowledges that McClenaghan does not disclose “wherein the fluid supply conduit defines a first cross-sectional area, the two or more fluid channels in combination define a second cross-sectional area, and a ratio of the first cross-sectional area to the second cross-sectional area is between about 1:1.1 and about 1:2.8,” as recited by claim 26. Instead, the Office Action asserts that the claimed range would have been obvious to one of ordinary skill in the art. The Applicant disagrees, because, as discussed above in connection with claim 2, the device of claim 26 provides non-obvious advantages over the prior art. For example, as demonstrated in the attached independent test reports, the device of claim 26 is approximately 9.4% to 9.5% more fuel efficient than prior art devices. Accordingly, the Applicant submits that claim 26 is patentable over McClenaghan.

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(2) The Office Action rejected claim 11 under 35 U.S.C. § 103(a) as being unpatentable over McClenaghan in view of U.S. Patent No. 4,711,271 to Weisenbarger et al. (“Weisenbarger”). Claim 11 depends from claim 10, which, as demonstrated above, is patentable over McClenaghan. Weisenbarger does not remedy the deficiencies of McClenaghan. Accordingly, claim 11 is patentable over any reasonable combination of McClenaghan and Weisenbarger.

Conclusion

All of the stated grounds of rejection have been properly traversed, accommodated, or rendered moot. Applicant, therefore, respectfully requests that the Examiner reconsider all presently outstanding rejections and that they be withdrawn. Applicant believes that a full and complete reply has been made to the outstanding Office Action and, as such, the present application is in condition for allowance. If the Examiner believes, for any reason, that personal communication will expedite prosecution of this application, the Examiner is hereby invited to telephone the undersigned at the number provided.

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Prompt and favorable consideration of this Amendment is respectfully requested.

Respectfully submitted,

Date: May 17, 2010

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